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II. *An Account of a Number of Medicinal Springs at Saratoga, in the State of Newyork, by Dr.* SAMUEL TENNEY.

Saratoga, September 1, 1783.

DEAR SIR,

YOU may probably recollect, that the laſt time I had the pleaſure of ſeeing you, I mentioned ſome mineral ſprings, in the vicinity of this place, which I had not then ſeen. I joined the regiment ſoon after, and took the firſt opportunity to viſit them; and, I aſſure you, I never had leſs reaſon to repent of any pains taken to gratify my curioſity in my life. They are ſuch a production of nature as is calculated, not only to attract the notice, and excite the admiration of the illiterate; but to engage the attention of the phyſician, the chemiſt, and the philoſopher.

They were unknown (except to the Mohawks, in whoſe country they are found) 'till about thirteen years ago; at which time they were diſcovered by ſome ſurveyors. The land, for ſeveral miles round them, is a wilderneſs. They have been conſiderably frequented by the poorer ſort of people, ever ſince their diſcovery; but for want of proper medical directions, and neceſſary accommodations, their uſefulneſs has been hitherto much confined. I think they want only a ſuitable introduction to the world, and ſome convenient houſes for boarding and lodging patients, to render them, under the advice of judicious phyſicians, of very important ſervice to the country. Whether my expectations are too ſanguine, time will diſcover. In the interim, for your ſatisfaction, I will firſt give a deſcription of the wells—

in the next place, ſome experiments which I made on their waters, with ſuch obſervations as naturally occurred to me in conſequence of them—and then relate their effects, in ſuch caſes as I had an opportunity of obſerving, with ſome general remarks reſpecting their medicinal properties.

The ſprings are about ten in number; of which the extremes may be half a mile apart. They are ſituated about fourteen miles northweſterly of General Schuyler's ſeat, at Saratoga, in a kind of bog meadow, a few rods wide, through which runs a pleaſant brook of ſweet water. The land on each ſide of the meadow, riſes fifteen or twenty feet above it; on the ſide next the ſprings, ſtony, but fit for cultivation; on the oppoſite ſide, ſandy and barren. The bank adjoining ſome of the principal ſprings is very ſteep, and bound with a broken ledge of lime rocks, generally incruſted with flint, to the thickneſs of near an inch. This incruſtation, which is unequal and ragged, gives them a very curious appearance. This ledge does not extend more than fifteen or twenty rods. From the place where it terminates, to the upper ſpring, there is an eaſy declivity from the level land above, to the margin of the meadow. For ſome diſtance in this extent, the brook, which like moſt others, winds through the meadow in a ſerpentine courſe, runs cloſe to the bank. This part is, in ſome places, completely bridged over, for ſeveral rods, with large tables of ſtone, of about a foot thick; which were evidently ſhaken off the declivity, and ſhot over the bed of the ſtream. The bank, though it is covered with a conſiderable ſtratum of earth, appears to conſiſt principally of a ſolid maſs of rock, whence thoſe large plates were ſhaken. The remaining part is, in many places, cracked into deep fiſſures, two or three feet wide, and generally covered with tables, ſimilar to thoſe above mentioned. In other places they are open, and diſcover long ſubterraneous vaults. Theſe ruins extend perhaps twenty rods, and were doubtleſs, if we may judge from preſent appearances, produced many ages ſince, by ſome very violent convulſion of nature.

I have been induced to be thus particular in my deſcription of the neighbouring bank, not only from its ſingularity, but likewiſe on account of a conjecture which I ſhall hereafter venture to make, that there may be ſome connexion between the cauſes of thoſe appearances, and thoſe that gave riſe to the ſprings.

I ſhall now attempt a deſcription of the ſprings, beginning with the uppermoſt. This is about two rods from the foot of the bank ; the intervening meadow, a deep mud. This ſpring may be more properly termed a well. It is of an oval figure, and about three feet in its longeſt diameter. Its depth is undiſcovered, though it has been ſounded with a pole many feet long. It is perpetually emitting an infinite number of air bubbles, from the ſize of thoſe in a glaſs of bottled cider, to that of a marble toy. This ebullition is conſtant, though not uniform. The larger will frequently intermit for a ſhort ſpace, and then recommence with renewed force.

The ſtream of water from this well, is not much larger than might paſs through a large gooſe quill. The well is in the centre of a ſtony ſubſtance (raiſed about three feet above the ſurface of the meadow) which makes the perpendicular walls; and gradually inclining, terminates at the diſtance of eight or ten feet from it. This ſtony concrete is ſoft and friable; and when broken off where it is wet, ſmells like a freſh oyſter ſhell.

A few rods from this is another ſpring of the ſame kind, which diſcharges a ſtill ſmaller quantity of water, and has but little ſtony matter about it. From appearances, I cannot but conjecture, that this muſt be of much later date than the former. There is one circumſtance which renders it more than probable: the former was, 'till within a few years, ſurrounded with ſeveral others (ſome ſay ten or twelve) within the extent of the ſurrounding concretion. The orifices of theſe, ſeveral of which are ſtill viſible, are become impervious. The water therefore, formerly diſcharged by them, muſt have found vent by ſome other courſe; as it is hardly probable that it could find admittance into the main well, through its ſolid ſides, it is natural to ſuppoſe that it might go off in a lateral direction, where it found the leaſt reſiſtance, and force a paſſage in this place.

The next ſpring of any importance, is at about the ſame diſtance from the bank as the firſt; and differs from it, in diſcharging a leſs quantity of water, and in being a kind of pool, inſtead of a well. The area is an irregular parallelogram, of about eight feet by five, and near two feet deep. It is ſurrounded by an equal quantity of the ſame ſtony ſubſtance as the firſt, with which, as I have been informed, it was formerly nearly covered. But the ſtone being ſoft and friable, part of it was broken away ſoon after its diſcovery, to render it commodious for bathing: the remainder has been beat down by ſome means, not long ſince. From the foot of the ledge of rocks, above deſcribed, and within two rods of this pool, iſſues a conſiderable ſpring of very good ſweet water.

The laſt that demands a particular deſcription, proceeds from the ſolid ground, about a rod from the foot of the ledge, and at the ſame diſtance from the margin of the meadow. This is a well whoſe walls are a ſolid rock, of a conical form, about five feet high, with a pretty broad baſe. Near the ground, however, this rock is light and porous, with a mixture of vegetable ſubſtances, and here and there, the ſhell of a very minute muſcle or ſnail. The heavy compact part is diviſible into ſmall ſcales, and is of a cream colour, interſperſed with ſome light ſhades of red and yellow.

The cavity of this well is perfectly round at the top, and about nine inches in diameter. It grows wider as it deſcends, and becomes irregular in its figure. Its depth is unknown. It has ſome peculiarities that render it worthy of particular attention. The water is continually in a great agitation, boiling like that in a pot over a fire, and with the ſame noiſe; yet, it diſcharges but a very ſmall quantity of water, and that only once in a year. This happens, when the earth is filled with water by the vernal rains and melted ſnows, in the month of April or May. The water generally ſtands about a foot below the top of the rock; but it is frequently obſerved to riſe and fall a few inches. When a quantity is taken out, it gradually recovers its height, and remains there nearly ſtationary.

There appears, at firſt view, ſome difficulty in accounting for the large diſcharge of air from this ſtagnant well. To remove it, I am diſpoſed to believe that the water formerly flowing from it, which muſt have been conſiderable, has made itſelf a new vent. As ſoon as the ſtony concretion round this well, had riſen to the height of the fountain from which it is ſupplied, the water could no longer overflow, but muſt force for itſelf another outlet. This it might do from the lower part of the well, which is pretty deep. In this caſe, while the water went off in its new courſe, the air it contained would naturally keep its direct aſcent in the well. Theſe ſuppoſitions are rendered more probable by two obſervable circumſtances, viz. There are ſeveral ſmall ſprings at no great diſtance from this well, that appear to be of a later date; and theſe ſprings do not diſcharge ſo much air as the others, in proportion to their water.

The appearance of the waters in all theſe wells, is nearly the ſame; being of a light milky colour, and in ſome of them a little turbid, by the particles of common earth kept ſuſpended in them by their perpetual agitation. They are commonly covered in the morning with an azure tinctured film. Their taſte is (apparently) acido ſaline, and much the ſame in all the ſprings mentioned. Though the taſte itſelf is not pleaſant, yet the impreſſion which the water makes on the organs of taſte, as it paſſes over them, is very lively, pungent, and agreeable; like that of good bottled beer or cider: and after drinking freely of them, I uſually had eructations of the ſame pungent, ſtimulating gas, as is produced by drinking thoſe liquors. Unpleaſant as their taſte is at firſt, habit not only renders them tolerable; but to moſt perſons very agreeable. Moſt of the invalids whom I ſent to the waters, drank them after a ſhort time with great avidity, to the amount of ſeveral gallons in a day: and ſome of the moſt intemperate of them aſſured me, with great ſeriouſneſs, that they preferred them to any kind of ſpirits.

Having thus executed the firſt part of my plan, I ſhall next mention the experiments which I made on the waters. Theſe, on account of the diſtance of the ſprings from the poſt where I was ſtationed, and the want of a proper chemical apparatus, were few and ſimple. They were ſufficient, however, to determine the general impregnation of the waters, though not to aſcertain the proportions of the combination in the ſeveral wells.

1ſt. A quantity of the water was evaporated to dryneſs by boiling; a greyiſh inſipid powder remained, which produced a ſtrong effervеſcence with the vitriolick acid, and appeared to be nothing but an impure calcareous earth.

2d. To ſome of the water I added a ſmall proportion of the vitriolick acid; this occaſioned a violent effervеſcence for a ſhort time: after it had ſubſided, the water loſt its natural milky hue, and became as tranſparent as common water; its acidity was increaſed; but not in proportion to the quantity of acid that had been added.

3d. I threw into the water a quantity of ſalt of tartar, which inſtantly diſſolved without producing the leaſt effervеſcence. The water, however, became immediately turbid and milky. On ſtanding a few minutes, the milky ſubſtance began to ſeparate, and form into flocculi, which in a ſhort time, ſettled at the bottom of the phial, leaving the water clear and tranſparent. Notwithſtanding the quantity of ſalt of tartar was conſiderable, the taſte of the water was not alkaline, though eſſentially altered.

4th. I moiſtened with the water ſome conſerve of wild pinks (the only purple flower that I could find) but no change appeared that could indicate an acid: on the contrary, when I had wet ſome paper, previouſly ſtained with the ſame flower, the change of colour rather indicated an alkali. By wetting ſome of the ſame paper with a mixture of magneſia and water, the ſame change was produced.

Theſe experiments were made on the water of the upper well: As that of the other two wells is not eſſentially different, it is needleſs to mention the reſult of the experiments made on them; nor was I very particular in making them.

5th. Obſerving the appearance of the matter depoſited about the lowermoſt ſpring (which is a very ſmall one, ſituated on the other ſide of the brook, diſcharging not more perhaps than a barrel of water in twenty four hours, and not before mentioned) and finding the taſte of the water ſweetiſh inſtead of acidulous, not unlike a dilute ſolution of ſal. martis, I ſuſpected that it contained a conſiderable portion of iron. To determine it, I boiled, for want of nutgalls, ſome ſhavings of white oak bark. The decoction was tranſparent, and of a reddiſh brown: to one part of this I added two parts of the water; the mixture became immediately of a dark brown, and loſt its tranſparency.

From the experiments made on the water of the upper well, particularly from the firſt, it appears to contain a large quantity of calcareous earth; and from the ſame experiments, eſpecially the ſecond and third, it is probable, that this earth is ſuſpended in the water by means of fixed air. From the ferruginous film with which theſe waters are often covered, it ſeems that they muſt contain ſome iron; though the proportion was ſo ſmall, as not to be obſerved in the experiments which I made; but from the fifth experiment it is obvious, that the ſpring there mentioned is a ſtrong chalybeate.

It is obvious that theſe waters are eſſentially the ſame with the acidulæ of Pyrmont, Seltzer, &c. which have ſo long been famous in Europe. The chemical analyſis of thoſe waters, and the experiments relative to the ſolubility of martial and calcareous earths in water, by the intervention of fixed air, made by Doctor Brownrigg and others, are ſo well known, it is unneceſſary for me to give a particular explanation of the cauſes of the phenomena obſerved in the preceding experiments.

Notwithſtanding theſe waters appear, by their chemical analyſis, to be ſimilar to the acidulous waters of Europe, they are probably much ſuperiour to them in their medicinal virtue. That they are much more ſtrongly impregnated, particularly with fixed air, is evident. The large quantity of calcareous ſubſtances found in theſe waters, muſt ſaturate much of it; yet ſo much of it remains unſaturated, as to give ſuch a pungency to the water, that a quantity of it held in the mouth for a few ſeconds, burns it like ardent ſpirits. It is likewiſe well known, that theſe waters will burſt any glaſs or earthen veſſel, and force their way through any wooden caſk, in which they are encloſed. This makes it impoſſible to tranſport them, in any conſiderable quantity, even the ſmalleſt diſtance, unleſs part of their fixed air be previouſly diſcharged. If they remain expoſed to the atmoſphere, the whole will ſoon be ſeparated, after which they become dead and vapid.

Conſidering the vaſt quantity of fixed air contained in theſe waters, it is probable that the chalybeate is the ſtrongeſt of the kind yet diſcovered. That it is highly impregnated, is evident by the taſte. The fixed air, however, ſo far predominates, as to diſguiſe, in a great meaſure, its diſagreeable ſweetneſs, and prevents its nauſeating the ſtomach. How far the large quantity of ſaturated calcareous earth which they contain, may affect their medicinal properties, muſt be left to be determined by future obſervations.

The want of a proper apparatus put it out of my power to make ſuch an analyſis of the waters, as to determine in what proportion the ſeveral ſubſtances are combined with them in the ſeveral ſprings. There are alſo ſome other appearances, worthy the attention of a philoſopher, which, for various reaſons, I could not enter into an inveſtigation of. It may afford an agreeable amuſement to any gentleman of ability and leiſure, to proſecute theſe inquiries. I ſincerely wiſh, that ſome ſuch would undertake the taſk ; that the world may be favoured with a full and accurate account of theſe curioſities.

This analyſis of theſe waters, imperfect as it is, may enable us to account for the formation of thoſe ſtony ſubſtances which ſurround them. The fixable air, as it approaches the ſurface of the water, becomes elaſtick, and flies off: In conſequence of this, the water aſſumes a milky hue, and ſome part of the calcareous earth is precipitated. To aſcertain the truth of this ſuppoſition, I pulverized ſome of the ſtones (both of the porous and compact kind) in a mortar. They both appeared perfectly ſimilar to the calcareous earth, procured by evaporating the water, and effervefced in like manner with the vitriolick acid.

From the large quantities of calcareous matter depoſited round theſe wells, and the extent of ground rendered perfectly ſterile by the overflowing of the waters, (for there is no kind of vegetation for many rods round on the lower ſide) I cannot but ſuppoſe, that theſe diſcharges of water have been much greater heretofore, than they are at preſent: for were they coeval with the earth, I can hardly conceive that the calcareous depoſit from ſo ſmall quantities of water, ſhould have formed ſuch maſſes; eſpecially, when it is conſidered that all kinds of large quadrupeds are very fond of it, and that, 'till lately, this country has been well ſtocked with them. In effect, they have all the appearance of being in a ſtate of decay. There is one of a ſmall ſize, within ſix feet of the conical well, and nearly of the ſame form, which at preſent diſcharges neither air nor water, though it contains the latter, of the ſame quality with the others.

I will here make the conjecture which I promiſed, reſpecting the cauſe of the rupture of the rocks near the upper well. That the apparent ruins are the product of ſome violent convulſion of the earth, cannot be doubted by thoſe who have ſeen them: and that they could have been produced by an earthquake, the ſcene of whoſe immediate action lay at a diſtance, does not appear probable: the effects are evidently too great. The moſt reaſonable ſuppoſition then ſeems to be, that however extenſive the commotion might have been, which attended this exploſion of the rocks, the cauſe of it muſt have been in the vicinity, and have operated immediately on this maſs.

In ſearching after ſubſtances capable of producing ſuch effects, the ledge of calcareous rock (already deſcribed) adjoining the ſprings, preſents itſelf to our view. Theſe rocks, called here lime rocks, are found in this part of the country in very large maſſes; and it is probable, that this ledge extends to a conſiderable diſtance below the ſurface. It is well known, that this lime rock contains a large portion of fixed air; that it is capable of being decompoſed by acids, fire, &c. and that the ſubterranean regions abound with the vitriolick acid, where it unites with various baſes, forming the vitriols, allum, &c. If we ſuppoſe a quantity of this rock, at a diſtance from the ſurface, decompoſed by the vitriolick acid, or otherwiſe, and its fixed air rendered elaſtick, would not the force with which this air would endeavour to expand itſelf, be ſufficient to produce ſuch an exploſion, as would burſt aſunder the moſt ſolid rock? The principal apertures would probably be immediately cloſed; but if the ſame cauſe continued to act, it muſt preſerve ſome ſpiracula, where it found the leaſt reſiſtance: the exploſion would have formed more or leſs of a cavity within the earth, and this cavity would naturally become a reſervoir of water. This water, ſaturated with the fixed air, continually ſupplied by the decompoſition of the rock, would be a proper menſtruum for diſſolving the calcareous earth, or iron ore, which it might meet with in its paſſage; and before its arrival at the ſurface of the earth, form the combination which we meet with in the ſprings. It is, however, but a conjecture; and one perhaps, that is not capable of being verified: as ſuch, I ſubmit it.

I ſhall now proceed to complete the execution of my plan, by giving a hiſtory of ſome caſes, and the effect of the waters. In theſe, however, I cannot be very particular, as I had not the precaution to take any minutes.

It may be proper to premiſe, that theſe acidulous waters operate ſenſibly by vomit, ſtool, and urine. The firſt happens, only when they are taken on an empty ſtomach; and a pretty large quantity is neceſſary to produce the ſecond. The laſt, therefore, is the evacuation which they muſt naturally excite.

The firſt patients that I ſent were about thirty in number. Their diſorders were rheumatick, ſcorbutick complaints, &c. with which old regiments generally abound. They almoſt all returned perfectly relieved, particularly the rheumatick patients. Indeed I am diſpoſed to believe, as well from the accounts of the people in the vicinity, as from my own obſervation, that in the chronick rheumatiſm, the waters are a very certain cure.

Among theſe patients was one, whoſe caſe deſerves a more particular deſcription. He was a man of about twenty four years of age, of a ſlender habit, and delicate conſtitution. He had not been fit for duty much above half the time, for the two years he had ſerved in the regiment; and for five or ſix months, had been troubled with ſcrophulous and pulmonick complaints, a pain in his breaſt, cough, and ſometimes a ſlight hæmoptyſis. At this time he had a hectick fever; and I ſuſpected that he had tubercles formed in his lungs, which were about ſuppurating.

I ſent him to the ſprings in the month of April. By drinking the acidulous water about a fortnight, his ſymptoms were ſo far removed, that he has enjoyed tolerable health, and has done his duty in the corps ever ſince, excepting that very lately he felt ſome ſymptoms of his old diſorders, which were ſoon removed by returning to the waters.

I had afterwards two patients, whoſe livers were left greatly tumefied, indurated, and painful, by an obſtinate jaundice; on which the common deobſtruents had little or no effect. I ſent them to the ſprings for relief; and within a week they returned perfectly cured.

A girl belonging to Albany, in conſequence of a fall on the ice, above two years before, had ſeven or eight ſores broke out on the whole length of her left thigh, which in time became ulcerous. By the advice of Doctor Young, who had very faithfully attended her, ſhe was carried to the ſprings. On her way ſhe ſtopped at the garriſon, and I ſaw her. All the muſcles of her thigh were uſeleſs; and her knee conſequently, deſtitute of any voluntary motion. Her leg was drawn backwards, and fixed: her thigh was conſiderably enlarged, and in places, very hard: the ulcers had a foul and angry appearance; and at times ſhe ſuffered conſiderable pain. After ſhe had uſed the waters a fortnight, ſhe returned, and I ſaw her again. The ſwelling and induration were removed; her pains were much abated; her knee was more flexible; and her ulcers had aſſumed a favourable appearance. It is not ſuppoſable that in ſuch a caſe, any courſe of internal medicines could effect a cure: but, I believe that ſo much could not have been done towards it, in the ſame time, by the beſt medicines of the ſhops, though ever ſo judiciouſly adminiſtered; nor, perhaps, in a much longer.

Many people in the vicinity, ſuppoſe the waters a cure for intermitting fevers; and when properly uſed, I have no doubt but that they may be. For this purpoſe, after uſing the acidulous waters a few days, recourſe muſt be had to the tonick virtues of the chalybeate. But for want of proper directions, I believe this has not been practiſed. The advantages derived from them, therefore, were the ſame that are produced by evacuations, and ſmall doſes of tartar emetick, by which the fits may very often be broken, and the diſorder ſometimes removed. I have made trial of them in but one caſe of this diſorder; and that was before I had diſcovered the properties of the different ſprings. The patient uſed the acidulæ alone; and was only well prepared by them for the uſe of the bark.

As a practical proof of the tonick power of the chalybeate waters, I might mention the caſe of a woman whom I found at the ſprings. She complained, that the acidulous waters (of which alone ſhe had drank for ſeveral weeks) reduced her ſtrength. From a perſuaſion of the aſtringency of the chalybeate ſpring, I adviſed her to drink a moderate quantity of it, for a day or two, and to repeat it occaſionally. I ſaw her again ſome time after, when ſhe informed me that ſhe had followed my advice, and always found from it, a remarkable reſtoration of ſtrength.

Theſe are all the caſes that are worth mentioning, in which the good effects of the waters were evident; though perhaps, eighty patients belonging to the regiment may have uſed them ſucceſsfully, moſt of their complaints being of little conſequence.

I muſt not however, omit one caſe, in which the ſucceſs attending the uſe of the waters anſwered neither my wiſhes, nor my expectations. An officer in the regiment, a little paſt the meridian of life, had been for many years, troubled with a tetterous eruption, on different parts of his body. It gave him no great uneaſineſs, 'till the ſummer of the year 1780, when it fixed on one of his ankles. Notwithſtanding many topical applications, it daily gained ground; and the latter end of the year 1781, after an active campaign, had poſſeſſed that whole leg, and part of the other. The diſorder would ſometimes alternate with his ſtomach and bowels, producing ſevere pains, with a copious diſcharge of foul matter by vomit, and ſometimes by ſtool. The eruption was removed from his legs by a very ingenious ſurgeon in the American hoſpital. His ſtomach was, however, frequently diſordered afterwards; and he was, perhaps, on the whole, not much better for the removal of the diſeaſe from the ſurface. During the laſt winter, his ſtomach and bowels were frequently much affected; and though his appetite was generally good, yet his digeſtion was impaired, and few kinds of food would remain on his ſtomach. Evacuations, with the bark and bitters, yielded a temporary relief; but produced no permanent advantage.

In this ſituation he reſolved, about the middle of April, to try the effect of the ſprings. From the accounts I had received (for I had not then ſeen them) I approved of his plan; and he immediately proceeded to execute it. After uſing the acidulous waters for twelve or fifteen days, he returned to quarters, ſurpriſingly reduced; complaining that "they had torn his ſtomach all to pieces."

As ſoon as he had recovered ſtrength enough to ride, he retired from ſervice, and I have not heard from him ſince. I apprehend that he uſed the waters imprudently, and that if he had made a judicious uſe of the two different kinds, he might have found that aſſiſtance from them, which he had in vain ſought from other medicines. He is fully of this opinion himſelf; and aſcribes their failure to his drinking them in pretty large quantities, when his ſtomach was too weak to bear them.

I beg leave to ſubjoin two or three general remarks on the virtues of theſe waters. From the caſes related, I think we may conclude, that the acidulous waters poſſeſs conſiderable aperient or deobſtruent powers, and may therefore, be uſeful in moſt kinds of obſtructions. That they ſhare the refrigerant and ſedative properties of the acids, cannot be diſputed. By theſe they are well calculated to remove that inflammatory diatheſis, which uſually accompanies ſo many diſorders, and embarraſſes the phyſician in his preſcriptions.

Among the reſt, do they not promiſe to be ſerviceable in removing that obſtinate, though ſometimes ſmall, inflammation of the lungs, which ſo often terminates in a phthiſis pulmonalis and death? I think their ſucceſs in the pulmonick caſe above related, ſome proof of it.

The chalybeate water may, without doubt, be an excellent remedy in all caſes of ſimple relaxation, or where that is the primary diſorder; and is always at hand to brace up, and invigorate thoſe patients, who are debilitated by the uſe of the acidulous.

Theſe are a few of the obvious medicinal virtues of theſe curious ſprings. But, perhaps, nothing but a ſeries of accurate obſervations by ingenious practitioners, can determine all their properties and excellencies.

I am, &c.

SAMUEL TENNEY.

DR. FISHER.

P. S. Five months after writing the above, I ſaw the officer whoſe caſe is there related. He informed me, that he got home with difficulty, and for ſome time declined ſo faſt, that he deſpaired of recovering. At length, however, his conſtitution, naturally vigorous, prevailed over his diſorder: his ſtrength was reſtored: for ſeveral months he had been entirely free from any ſymptoms of his former complaints; and had enjoyed a better ſtate of health than he had for ſeveral years before. As he uſed little or no medicine after drinking the waters, I think we may juſtly conclude that the acrimony, which for two years had rendered his life miſerable, was eradicated by them alone. The pulmonick patient likewiſe, whoſe caſe is there mentioned, continued in good health. S. TENNEY.

DR. JOSHUA FISHER, F. A. A.

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III. *Conjectures of the Natural Cauſes of the North Weſt Winds being Colder, and more frequent in the Winter in New England, than in the ſame Degrees of Latitude in Europe, by* SAMUEL HALE, *Eſq. of Portſmouth,* F. A. A.

THE attraction of the Moon and Sun makes the current of air and water, on the globe, move continually towards the weſt, between the tropicks; unleſs where obſtructed by land, high mountains, &c. which cauſes an eddy, both in the the air and water, in a contrary courſe beyond the tropicks. And we actually find the gulf ſtream to be a very ſtrong current, reaching from Cape Florida, along the ſhore, at unequal diſtances therefrom, to the Iſle of Sable, and Grand Bank. And it is highly probable, that the ſand carried by this ſtream, together with the ſand carried down by great rivers into bays, and the current out of thoſe bays meeting with the gulf ſtream, by their eddies, have made Nantucket Shoals, Cape Cod, George's Bank, Cape Sable Bank, the Iſle of Sable, &c. But to return: the wind, which being moſtly weſterly beyond the tropicks, as an eddy to the tradewind, by paſſing along upon the tops of the